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ABSTRACT

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SIMULATION GAMES IN THE CLASSROOM: HOW IMPORTANT
IS THE POST-GAME DISCUSSION?

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The Johns Hopkins University

Baltimore, Maryland

INTRODUCTORY STATEMENT

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through five programs to achieve its objectives. The Academic Games program has developed simulation games for use in the classroom. It is evaluating the effects of games on student learning and studying how games can improve interpersonal relations in the schools. The Social Accounts program is examining how a student's education affects his actual occupational attainment, and how education results in different vocational outcomes for blacks and whites. The Schools and Maturity program is studying the effects of educational experience on a wide range of human talents, competencies, and personal dispositions in order to formulate-- and research--important educational goals other than traditional academic achievement. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. The Careers and Curricula program bases its work upon a theory of career development. It has developed a self-administered vocational guidance device and a self-directed career program to promote vocational development and to foster satisfying curricular decisions for high school, college, and adult populations.

This report, prepared by the Academic Games program, describes a controlled experiment that investigates whether the use of a post-game discussion results in more effective accomplishment of a simulation game's objectives.

ACKNOWLEDGMENT

I thank Barry Hughes and Edwin Leimkuhler for making possible the experiment reported here.

ABSTRACT

The importance of class discussion following a simulation game was investigated by means of an experiment in which four classes of high school students played Ghetto for two periods. Two classes then discussed the game, while the other two were tested before any discussion of the game. The results showed the discussion to have no effect on students' understanding of the game and no consistent effect on their attitudes toward the real-life persons represented in the game. The discussion did have a positive effect on two of the twelve individual attitude items.

INTRODUCTION

When a teacher uses a simulation game as a classroom activity, he will almost always follow the playing of the game with a class discussion of the game. How important--as an aid to learning on the part of the students--is this post-game discussion? Authors who write books for classroom teachers suggest that it is very important; consider the following passages from two such books:

One function that the teacher should neither delegate nor neglect is the debriefing. This is simply a postgame discussion, but the value of a game is seriously diminished without it and considerably enhanced by it. The very nature of a game suggests the need for a discussion during which the various activities that occurred simultaneously during play, and were thus obscured to many players, can be brought together to describe a total picture.

While students can benefit from playing a game among themselves, as a kind of interlude or diversion from ordinary classroom activities, an important opportunity would be wasted if the teacher simply returned to conventional activities without discussing it.

(Gordon, 1970, p. 116)

... Those who have experimented with simulation in the classroom suggest that follow-up discussions are very important if the simulations are to realize their full learning potential...

The important thing about teaching with simulations is for the teacher to get the students to be explicit about their experience with and in the game, and, from there, to examine their views of the real world or referent situation.

(Nesbitt, 1971, p. 28)

This same point--the importance of the post-game discussion--is made in a negative way by Fletcher (1971b), in an article written for educational researchers investigating the effects of simulation games. Fletcher argues that researchers interested in the effects of a game should avoid

including a post-game discussion as part of their experimental treatment, precisely because of the educational value of the discussion:

Postgame reflection on what happened in the game and postgame discussions about what was learned should be considered a dependent variable ... rather than part of the treatment. There is simply too much opportunity for teachers to suggest what it was the students were supposed to learn from the experience, or for the insights of only a few students to be spread to the whole group of participants to have any confidence in attributing learning to a game experience when the postgame discussions are included in the treatment. In operational terms, any posttests or other independent measures of change during a game experience should be given immediately after the game, not after the postgame discussions.

(p. 428)

Interestingly, and perhaps surprisingly, none of these authors cites any specific experimental evidence for the importance of the post-game discussion. If the effects of the discussion are as great as Gordon, Nesbitt, and Fletcher suggest, surely these effects should not be difficult to detect in a controlled experiment. Such an experiment would compare the performance, on a test of knowledge, skills, or attitudes relevant to the game, of students who have played and discussed a game with that of students who have played the game but have not discussed it.

At least one such experiment has already been done--that of Chartier (1972)--and the findings showed no significant discussion effect. However, the generalizability of Chartier's findings remains open to question, particularly since his subjects were Ph.D. candidates and the game was a very simple one (Generation Gap).

This paper reports another such experiment. The simulation game used in the experiment was Ghetto (Toll, 1969.) The educational objectives of the game are described in the "co-ordinator's manual" included in the

game kit:

Ghetto is designed to give the players a vicarious experience of some of the pressures of life in the underprivileged areas of the inner city. It attempts to deal with economic and family responsibilities, slum schools, rewards and risks of illegal activities and the interaction between the individual and his neighborhood.

The game teaches that improving one's economic situation demands a wise and strategic use of time. It illustrates the fact that an early investment in education pays off throughout life. However, it also makes clear that there are barriers to completing one's education in ghetto schools: inadequate staff and materials, family responsibilities and emotional pressures that distract and discourage one from study.

In the second level of the game, the players learn that the condition of their neighborhood affects all of them, whether or not they are concerned about it, and that it affects them individually in different ways, depending on their family and personal situation. They find out that they can improve neighborhood conditions by investing time in community action.

They experience vicariously the economic pressures that drive people to engage in illegal activities despite the risk involved; that cause people to choose to be on welfare; that motivate people to defer present gratification for a greater future reward. They discover the ways in which having children affects a woman's economic situation and some of the special problems that working mothers have.

As he plays the game, the player has the experience of planning the life strategies for a poor person and meeting with the discouragements, frustrations and occasional good luck that are the common lot of the poor.

If the addition of a class discussion to the game experience results in more effective accomplishment of these objectives, then this effect should be reflected in the students' responses to a questionnaire designed to reflect their attitudes toward the poor. If the discussion increases their understanding of the game itself, then this effect should be reflected in the students' performance on a test designed to reveal their knowledge--or lack of knowledge--of the best strategies to use in the

game, of the analogy between elements of the game and the corresponding elements of real life, and of the reasons for specific rules in the game.¹

¹The use of these types of questions as measures of learning in a simulation game is suggested by Fletcher, 1971a.

METHOD

The subjects for this experiment were students at a boys Catholic parochial high school in a large Eastern city. The student body of this school represents an almost entirely white, middle-class population. The subjects were students enrolled in four social studies classes. Two of these classes met at the same time in the morning, and the other two met at the same time in the afternoon. The morning and afternoon classes were taught by the same two teachers.

In order to control for differences in teaching style, one teacher tested his morning class after they discussed the game and his afternoon class before any class discussion of the game; the other teacher tested his afternoon class after they discussed the game and his morning class before any class discussion. Random assignment of subjects to treatments was accomplished by pooling the students in the two classes meeting at each time of day and assigning them randomly to the two teachers for the duration of the experiment.

The students played Ghetto for two 60-minute periods. Each teacher divided each of his classes (the classes made up of randomly assigned students) into three groups for the playing of the game. Each game-group played the game in a separate room. The teacher went around from room to room to supervise the game-groups in his class.

The post-game discussions were held and an attitude questionnaire and a test to measure students' understanding of the game were administered on the third day of the experiment. Each teacher was given a list of questions for conducting the discussion and a cover sheet urging him

to limit his own participation in the discussion to asking the questions on the list and calling on students.¹

The attitude questionnaire was given before the test. This questionnaire, which the students answered anonymously, consisted of twelve statements about poor people. Half the statements expressed attitudes favorable toward the poor; the other half expressed unfavorable attitudes. The subject was to indicate his agreement or disagreement with each statement. The questionnaire was scored by awarding two points for each favorable response (agreeing with a favorable statement or disagreeing with an unfavorable statement), no points for each unfavorable response, and one point for each ambiguous response or non-response. Thus, possible scores ranged from zero to twenty-four, with a score of twelve representing a neutral position.²

The test used to measure the students' understanding of the game consisted of two questions on strategies in the game, three questions on the analogies between elements of the game and the corresponding elements of real life, and two questions on the reasons for specific rules in the game (rules that were intended to reflect conditions of real life). All questions were in free-response, short-answer format. The test was scored by awarding two points for a fully correct answer, one point for a partially correct answer, and no points for a wrong answer or non-response.

¹ The discussion questions and the cover sheet are reproduced in the appendix.

² Previous research (Livingston, 1970, 1971) has indicated that the Ghetto game itself, with no accompanying discussion, tends to raise players' scores on this questionnaire. A copy of the questionnaire is reproduced in the appendix.

To avoid any bias resulting from gradual changes that might have occurred in the standards used for judging answers to be fully correct, the order of the papers was randomized before the papers were graded.¹

¹ A copy of this test, with correct answers, is reproduced in the appendix.

RESULTS

The results of the attitude questionnaire are shown in Table 1 and Figure 1. Although the mean scores of the classes that discussed the game are higher than those of the classes that did not, the differences are small and could well be the result of random variation; the analysis of variance for the total scores on the attitude questionnaire showed no significant effects.¹

While the effect of the discussion on the total scores was not significant, the discussion could still have had a significant effect on one or more of the individual items. A multivariate analysis of variance on the twelve individual items showed that this was the case ($F = 2.1$ with 12 and 95 df; $p < .025$). Univariate analyses on each of the items indicated a significant discussion effect on two of them: one which read, "Poor people make their own slums," and another which read, "A lot of people who are unemployed just don't want to work." However, these effects were not large, accounting for only $4\frac{1}{2}$ percent of the total variance on the first item and $8\frac{1}{2}$ percent on the second.

The results of the test on the game itself are shown in Table 2 and Figure 2. Here the one class that scored substantially below the others was a class that discussed the game. Inspection of the class means on each of the three subtests showed that this class was lowest on all three subtests. Analysis of variance showed a significant teacher effect,

¹The internal consistency of the scores on the attitude questionnaire, as estimated by coefficient alpha, was .69.

accounting for about 7 percent of the total variance, and a marginally significant interaction effect, accounting for about 3 percent. Multivariate and univariate analyses of variance on the three subtests showed a significant teacher effect on the "representation" and "rule-justification" subtests, but not on the "strategy" subtest. The interaction effect was significant only for the "representation" subtest. There was no significant discussion effect.¹

¹The internal consistency of the scores on the test of understanding of the game was .56. The intercorrelations between subtests of this test ranged from .26 to .43.

DISCUSSION

The importance of the post-game discussion has become almost an article of faith in social studies education--a belief held unanimously among writers of books and articles on simulation games for social studies teachers. The results of the present experiment call this belief into question. The effects of the discussion on the students' attitudes were reflected on only two of the twelve questionnaire items and even these effects were not large. Considering the questionnaire as a whole, the effects of the discussion were not significant even at the .10 level.¹ And on the test designed to measure understanding of the game, the scores of students whose classes discussed the game were, on the average, slightly lower than the scores of students whose classes did not discuss the game.

The results of one or two experiments do not completely refute a generalization as widely accepted as the one this experiment was designed to test. Nevertheless, they should at least arouse some skepticism, especially in the absence of any experimental evidence to support that generalization. Future research may yet show that the post-game discussion is as important as it has been thought to be. But in the absence of any such findings, the results of this experiment (and those of the previously cited experiment of Chartier, 1972) suggest that those who speak and write on the subject of simulation games for social studies education should moderate their claims for the value of post-game discussions.

¹ That is, an observed effect this large could be expected more than 10 percent of the time as a result of chance variation, even if the discussion had no real effect at all.

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Table 1. Results of Attitude Questionnaire

Teacher	1		2	
	no	yes	no	yes
Discussion				
Mean	15.59	16.97	15.00	16.29
S.D.	4.25	4.92	4.13	4.48
Number of students	22	33	31	24

Analysis of Variance

Source	df	SS	MS	F	p
Teacher	1	20.08	20.08	1.001	N.S.
Discussion	1	47.61	47.61	2.372	N.S.
T x D	1	0.05	0.05	0.003	N.S.
Within cells	106	2127.25	20.07		
Total	109	2194.99			

Table 2. Results of Test on Game

Teacher	1		2	
	no	yes	no	yes
Mean	9.83	8.21	10.28	10.50
S.D.	2.81	2.85	2.40	2.21
Number of students	23	29	32	24

Analysis of Variance

Source	df	SS	MS	F	p
Teacher	1	56.84	56.84	8.56	<.01
Discussion	1	11.90	11.90	1.79	N.S.
T x D	1	22.39	22.39	3.37	<.10
Within cells	104	690.53	6.64		
Total	105	781.66			

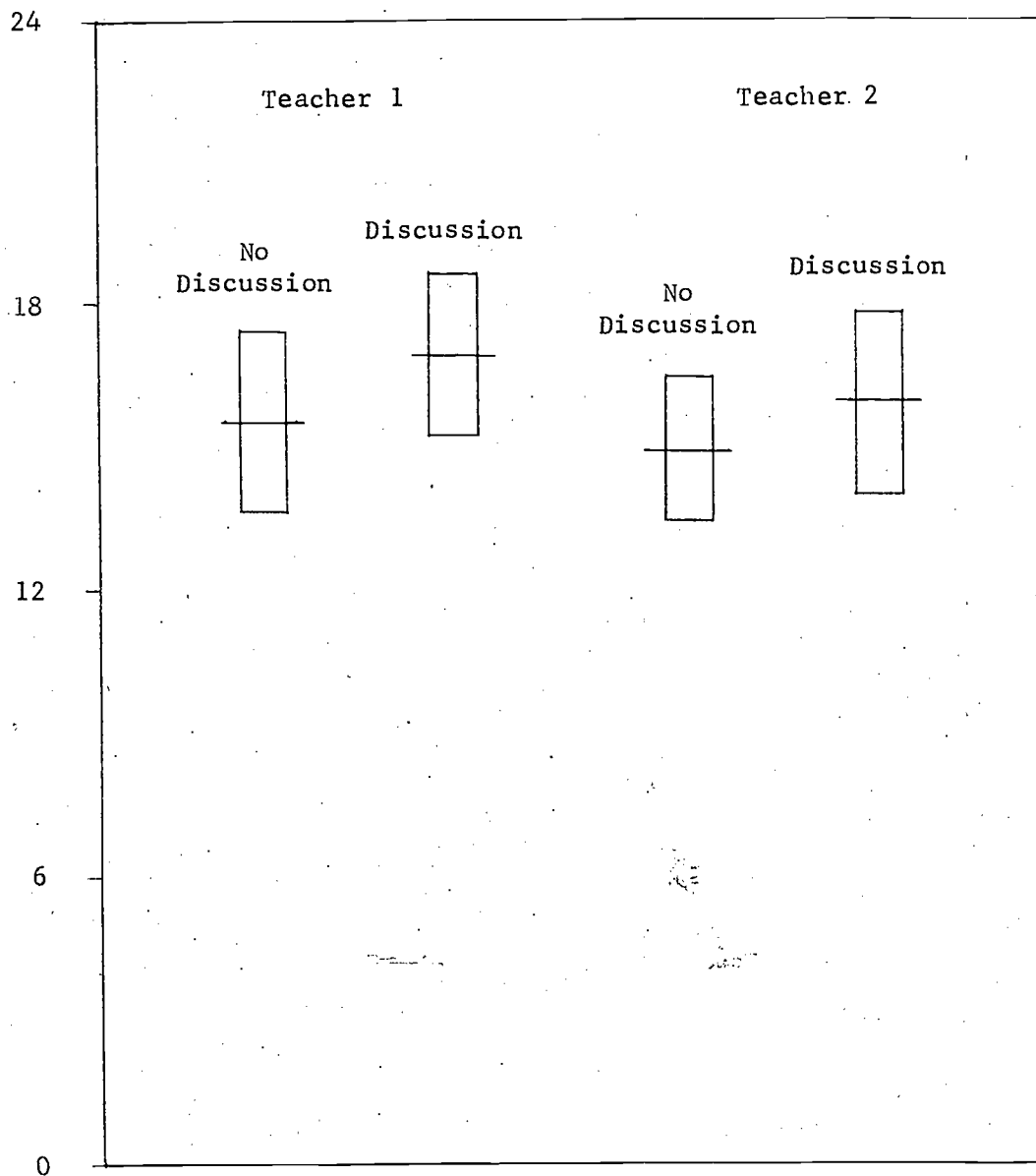


Figure 1. Attitude questionnaire: means and 95% confidence intervals.

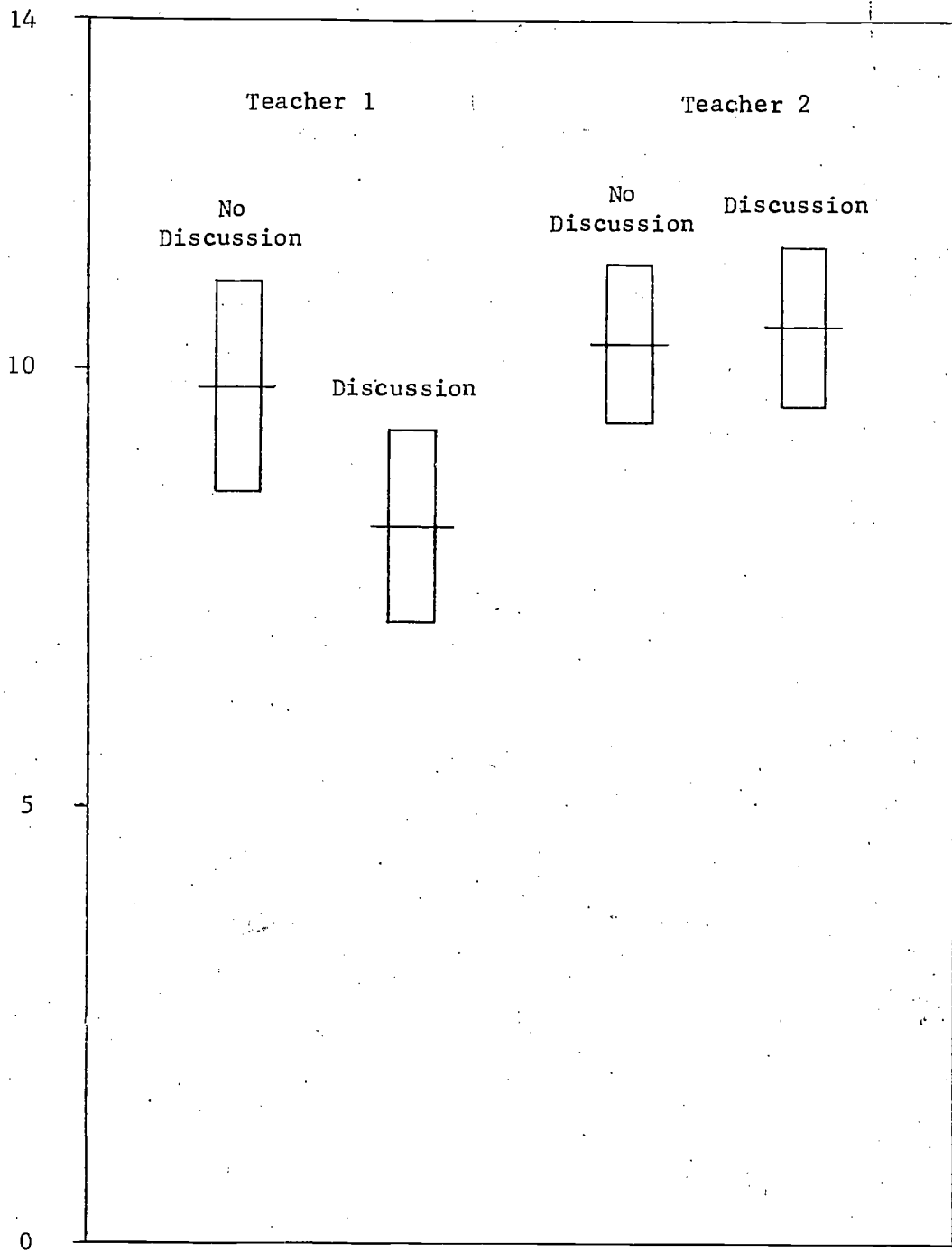


Figure 2. Test on game: means and 95% confidence intervals.

APPENDIX

TEACHER'S INSTRUCTIONS FOR CONDUCTING THE DISCUSSION

This class discussion is part of an experiment. In this experiment it is important that input from the teachers be controlled. Therefore, we are asking you to follow this lesson plan as closely as you possibly can and to avoid saying anything that is not on the lesson plan. You may feel that this restriction hampers your teaching style--that you could teach more effectively if you were free to give the students some extra information. That is exactly what we are trying to avoid. The reason is that we want to find out what students learn from discussing their own experiences. If you have given them additional information, we won't know how much they have learned from their experiences and how much from listening to you.

Notice that we are not trying to control input from the students--only from the teachers. The reason is that input from the students will depend on their experience in the game.

Here is a list of the things we would like you to do:

1. Begin the discussion and keep it going by asking the questions on the lesson plan.
2. Wherever possible, call on the students rather than saying something yourself.
3. If a student says something that isn't clear, don't rephrase it for him. Let him do it or let another student do it. (If you do it, the students will be learning from you, rather than from each other.)
4. In general, try to say as little as possible--the minimum necessary to keep the discussion moving.

It is not important to try to cover all of the discussion questions. But it is very important not to tell the students the answers to any of those questions and not to give them any other information during the discussion, except what they can learn from each other.

QUESTIONS FOR DISCUSSION OF THE GHETTO GAME

- I. What is the best way to get a high score in the game?
Is it better to take chances or to play it safe?
Is the best strategy the same for all the players in the game?
- II. What do the little plastic chips in the game represent?
Is it an advantage to have more chips? Why?
What do the points you get represent?
Why do some kinds of activities give you more points than other kinds?
- III. Why are there "victims" in the game?
What can the players do to keep from getting "victimized"?
- IV. When you put your chips on "neighborhood action" in the game, what does that represent in real life?
- V. How did you feel while you were playing the game?
Did anyone get victimized in the game? How did you feel when that happened?
Did anyone get caught hustling and get sent to jail? How did you feel when that happened?
Did anyone have a baby? How did you feel when that happened?
How do you think poor people in the city feel when these things really happen to them?
- VI. If you were really a poor person living in the inner city, would you do the same things you did in the game?

ATTITUDE QUESTIONNAIRE

Teacher of this class _____ Period _____

Teacher of your regular class _____

Tell whether you agree (A) or disagree (D) with each of the following statements. If you can't decide, then leave the space blank.

1. _____ Being on welfare is nothing to be ashamed of.
2. _____ In general, if a person is poor, it's probably his own fault.
3. _____ Poor people are as hard-working as anyone else.
4. _____ Being poor is no excuse for breaking the law.
5. _____ Poor people are as honest as people who aren't poor.
6. _____ Poor people make their own slums.
7. _____ Sometimes poor people turn to crime because they have no choice.
8. _____ Poor people generally have low moral standards.
9. _____ A lot of people who are unemployed just don't want to work.
10. _____ If a person is poor, it's probably because he never had the chances that other people have.
11. _____ Most poor people really try to keep their homes clean.
12. _____ Most people on welfare could get along all right without it if they had to.

TEST OF UNDERSTANDING OF THE Ghetto GAME

Name _____ Period _____

Teacher of this class _____

Teacher of your regular class _____

These questions are about the Ghetto game. Answer each question in on short sentence.

1. What is the best time in the game to invest chips in school?

(Ans: At the beginning of the game.)

2. What can you do to help keep from getting victimized?

(Ans: Invest chips in neighborhood action for safety.)

3. What does each chip represent?

(Ans: One hour per day.)

4. What does each round of the game represent?

(Ans: One year.)

5. What is "hustling?"

(Ans: Any illegal way of making money.)

6. Why is there a rule in the game that says you can't put chips in both welfare and work at the same time?

(Ans: Most welfare laws don't allow people who are employed to collect welfare benefits.)

7. If the housing level or the recreation level of the neighborhood goes up, mothers get an extra chip. What is the reason for this rule?

(Ans: They don't have to spend as much time taking care of their homes or their children, so they have more time for other things.)